

PATENT SPECIFICATION

DRAWINGS ATTACHED

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The inventor of this invention in the sense of being the actual deviser thereof with-
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COMPLETE SPECIFICATION

Improvements in Machine Tools

- We, R.S. STOKVIS & FILS, a French
body corporate of 20—22 rue des Petits-
Hotels Paris, France, do hereby declare the
invention for which we pray that a Patent
5 may be granted to us and the method by
which it is to be performed to be particularly
described in and by the following state-
ment:—
- Machine tools are already known which
10 comprise two saddles, each provided with a
tool-carrying carriage, the object of this
arrangement being to reduce the machining
time of a work-piece.
- In these known machine tools, the saddles
15 are disposed one on each of a vertical plane
passing through the horizontal axis of the
spindle of the machine tool, either in the
same inclined plane passing through this axis,
or in different planes.
- 20 Such machines have the disadvantage that
it is difficult to remove the swarf therefrom,
since there is only a little free space, directly
below the tools, between the slideways of the
saddles. Thus during operation, the swarf be-
25 comes wedged between these slides, or else
cannot be evacuated and remains on the
lathe bed or on the saddles.
- In order to avoid this disadvantage,
certain machines of the kind described above
30 include a saddle placed above the axis of
the spindle of the machine tool. In these
latter machines, the removal of swarf can be
performed more easily, but it is then im-
possible to introduce work-pieces to be
35 machined or to remove machined work-pieces
from above.
- The present invention has for its object
to overcome the disadvantages mentioned
above.
- 40 According to the invention, a machine tool
comprising a substantially horizontal work-
holding spindle and a bed which includes a
portion which, in a plane disposed trans-
versely of the spindle, is a wedge-shaped
45 section, and a slide for a saddle on each of
the surfaces of said portion which define the
wedge-shaped section, is characterised in that
both said surfaces are disposed on the same
side of a vertical plane containing the axis of
50 the work-holding spindle.
- With a machine tool in accordance with
the invention, the swarf can be eliminated
easily, either to the side of the spindle where
there are no saddles, or between the work-
55 piece and the saddles, and falls without
difficulty into a recovery trough placed be-
low the said spindle.
- Moreover, it is then an easy matter to
introduce or to remove a work-piece via the
60 side of the machine opposite to the saddles.
Alternatively, the saddles may be disposed so
that such introduction or removal can take
place from above the machine.
- Advantageously, in order to give a suit-
able thickness and a suitable solidity to the
65 bed of the machine, the two surfaces which
define the wedge-shaped portion of the bed
are disposed one on each side of a horizontal
plane passing through the said axis of the
spindle. In this case, with a view to per-
70 mitting the automatic introduction and/or
the automatic removal of a work-piece from
above the machine with the help of means
fixed on the latter, the uppermost of said
surfaces is inclined at an angle of not more
75 than 45° to a horizontal plane.
- The invention will now be described in
greater detail, by way of example, with re-
ference to the accompanying drawing, in
which:—
- 80

Figure 1 is a schematic sectional end view of part of a machine tool in accordance with the invention, and

Figure 2 is a similar view of a modified embodiment.

The machine shown in Figure 1 includes a horizontal spindle 1 with its axis Z perpendicular to the plane of the paper and carrying the work-piece 2 to be machined. On one side of the vertical plane XX' passing through the axis Z, the bed 3 of the machine includes a portion 4 of approximately wedge shape limited by two plane surfaces 5 and 6 disposed one on each side of the horizontal plane YY' passing through the axis Z. Near to the apex of the wedge portion 4, the surfaces 5 and 6 carry slides 7, 8, respectively, disposed parallel to the axis Z. On these slides, saddles 9, 10, respectively, are arranged to slide, under the action of means not shown. On the saddles 9 and 10, tool-carrying carriages 11 and 12, respectively, may slide at right angles to the axis Z, which carriages are mounted, for example, by means of a dovetail slide. Tools 13 and 14 are fixed on these carriages. Preferably the surface 5 is inclined at less than 45° to the horizontal plane YY'.

Thus, when the work-piece 2 to be machined turns around the axis Z, for example in the direction of the arrow F, the swarf arising from the machining of the work-piece can fall freely into a recovery trough (not shown) placed below the axis Z. The tools 13 and 14 machine different portions of the work-piece 2 and are not therefore superimposed. The swarf can thus pass freely between the work-piece 2 and the apex of the wedge portion 4. Moreover, the swarf entrained momentarily by the rotation of the work-piece 2, can fall from the side of the latter opposite to the bed 3 since this side is entirely clear of all parts of the bed.

Moreover, the disposition of the saddles 9 and 10 shown in Figure 1 permits the introduction or removal of the workpiece from above the machine, as well as from the side of the latter opposite to the saddles. It is therefore possible to provide means (not shown) on the machine enabling such introduction and/or removal to be effected automatically.

When with the machine of Figure 1 it is desired to machine a work-piece of small diameter, it will be seen that it is necessary to project the carriages 11 and 12 considerably from the saddles which carry them and to increase the length of tools 13 and 14. Consequently there is a loss of rigidity of the assembly and a large overhang of the

tools, which lead to a decrease in the precision of machining and a considerable risk of tool breakage.

The modified embodiment of the invention shown in the Figure 2 enables these disadvantages to be avoided. The parts of this embodiment corresponding to the parts of the machine shown in Figure 1 have been designated by the same reference numerals as in Figure 1.

In the machine shown in Figure 2, two flat saddles 16 and 17 slide, under the action of means not shown, on the bed 3 securely fixed to the frame 15 of the machine. The wedge portion 4 includes, in the region of its apex, a groove 18 serving as a common slide for the said saddles. Thus the tools 13 and 14 may be brought closer to one another, i.e. they can machine work-pieces of small diameter without their overhang thereby becoming too great.

As has been mentioned above, the swarf can fall freely into the recovery trough 19.

WHAT WE CLAIM IS:—

1. A machine tool comprising a substantially horizontal work-holding spindle and a bed which includes a portion which, in a plane disposed transversely of the spindle, is of wedge-shaped section, and a slide for a saddle on each of the surfaces of said portion which define the wedge-shape section, characterised in that both said surfaces are disposed on the same side of a vertical plane containing the axis of the work-holding spindle.

2. A machine tool according to claim 1, in which said surfaces are disposed one on each side of a horizontal plane passing through the axis of the spindle.

3. A machine tool according to claim 2, in which the upper-most of said surfaces is inclined at an angle of not more than 45° to a horizontal plane.

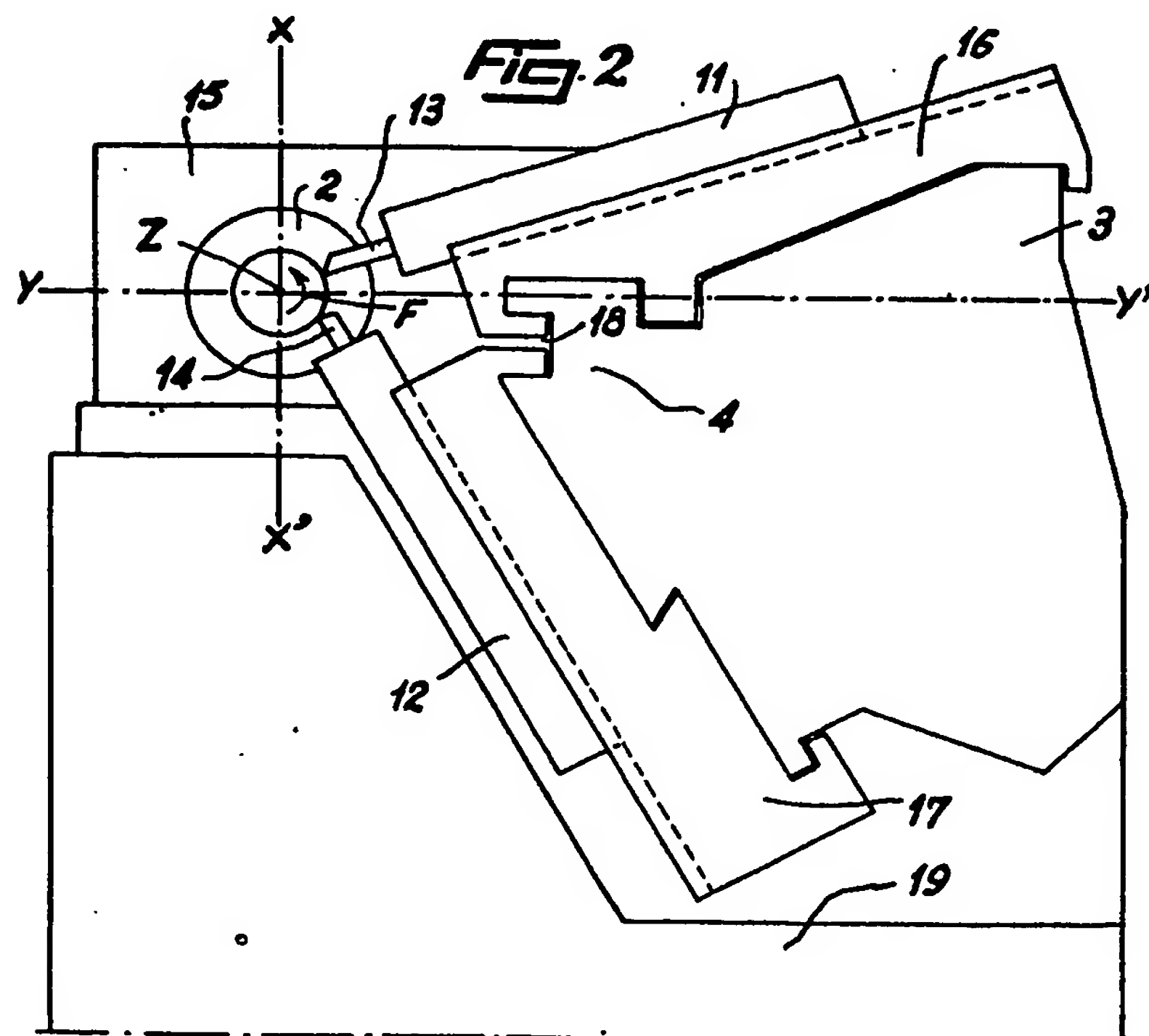
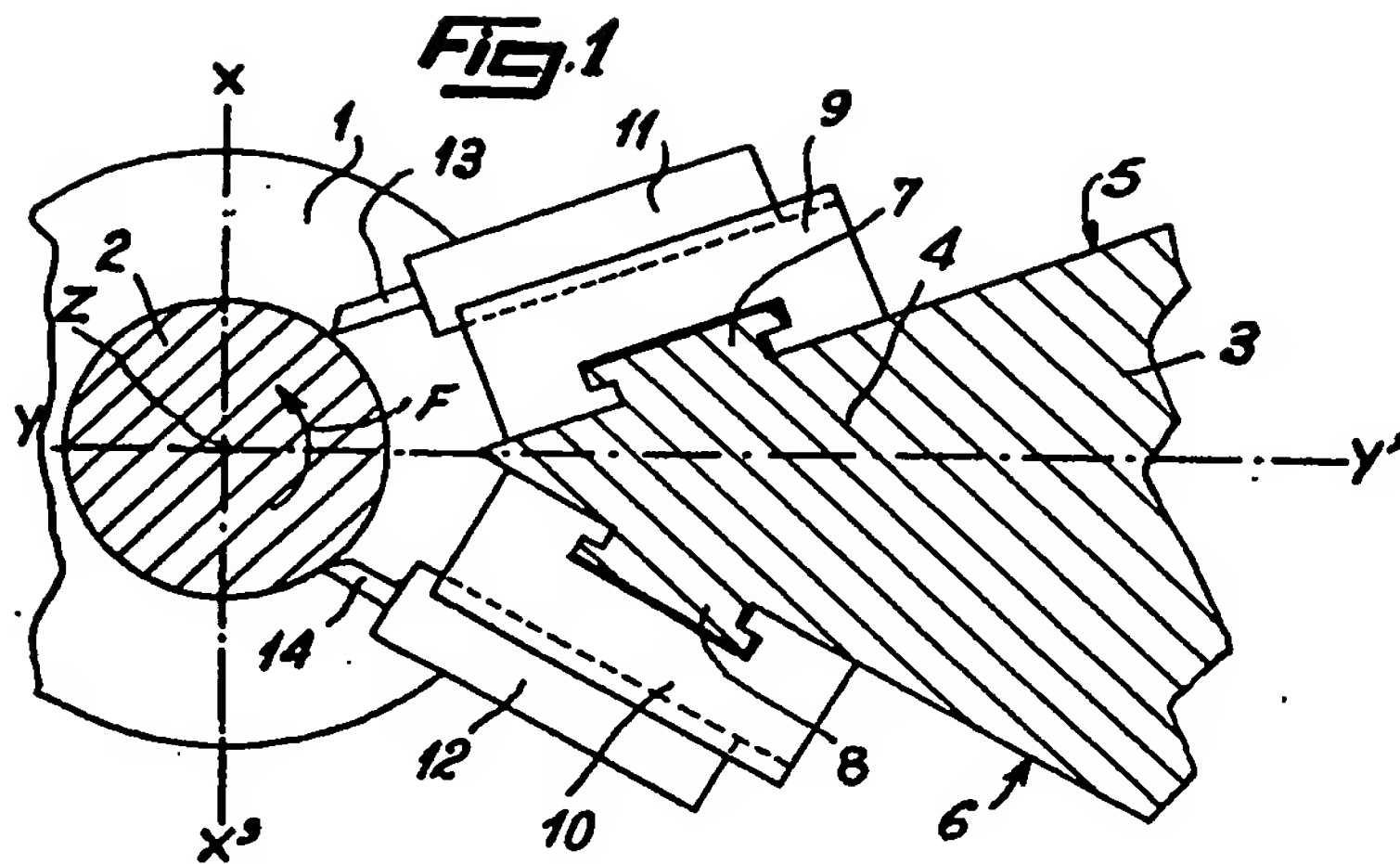
4. A machine tool according to claims 1, in which the wedge-shaped portion of the bed, in the region of its apex, has a groove serving as a common slide for the two saddles.

5. A machine tool constructed and arranged substantially as hereindescribed with reference to Figure 1 or Figure 2 of the accompanying drawing.

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1 SHEET *This drawing is a reproduction of the Original on a reduced scale*



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